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URBAN LAND USE CHANGE & MODERNIZATION: FROM GAS STATION TO 7-11/24 HR VIDEO MINI-COMPLEXES

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URBAN LAND USE CHANGE AND MODERNIZATION: FROM GAS STATION TO 7-11/24 HOUR VIDEO MINI-COMPLEXES

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Abstract

This study was conducted to discern the impacts on the neighbourhood due to changes in urban land use: gas stations being converted to convenience store complexes. The study concluded that litter around the store site was a major complaint. Adverse impacts were perceived by residents and patrons alike caused by a 24-hour facility in a single residential neighbourhood: an evening gathering place for youths. Accessibility and on and off-site parking did not appear to be a problem. However, the neighbourhood environmental quality was perceived to be jeopardized even though the residents felt the facility to be an advantage to the community. This change in land use appears to be a neighbourhood convenience and of benefit to consumers.

Further studies are necessary regarding pedestrian safety, and economic base analyses of these complexes, to ascertain the appropriate critical distances needed between themselves and other smaller locally-based enterprises in order to maintain viability and yet provide competition.

TABLE OF CONTENTS

Abstract i

1. INTRODUCTION 1
   1.1. Study Purpose 2

2. STUDY METHODOLOGY 3
   2.1. Site Selection 3
   2.2. Secondary Data 3
   2.3. Primary Data 5
   2.4. Site Characteristics 6

3. FINDINGS 8
   3.1. Accessibility 8
   3.2. Environmental Quality 10
   3.3. Neighbourhood Commercial Amenity 11
   3.4. Gas Station and the Convenience Complexes: What Differences? 14

4. ANALYSIS AND CONCLUSIONS 15

5. PLANNING IMPLICATIONS 17

6. ACKNOWLEDGEMENTS 20

Appendicies 21

1. INTRODUCTION

Recent studies indicate that during the last fifteen years there has been a significant decrease in the number of gas stations.† These sites are being replaced by convenience store complexes. The reasons for this change in land use are complex, varying from shifts in consumer preferences to the nature of competition. This rise in convenience store shopping also signifies a radical shift in marketing, shopping dynamics and consolidation of services. No longer is the 300 square foot "chinese" corner grocery store the norm; rather, what has replaced it is a 2000-5000 square foot 24 hour convenience store complex.

This new trend of convenience stores has been attributed to changing demographic trends in society such as, the rising number of dual income families, the greater number of single family households, the growth of disposable income, and the growing emphasis on leisure. These changes in type and level of service have also been paralleled with changes at the neighbourhood level. One such change is Video Cassette Recorder (VCR) ownership. Recent data indicate that 44 percent of households in Canada and the United States own VCR's, regardless of income level. Furthermore, the increase of single family households and the fact that many older apartment buildings were not built with laundry facilities, has influenced the demand for coin operated laundromats.

Appreciating the economic implications of wide-scale VCR ownership and a need for laundry facilities, entrepreneurs have been quick to respond to these consumer

†Feb. 1986, City of Vancouver Managers Report, and L.E. Contrell. 1985, Gasoline Stations in Vancouver, B.C. City of Vancouver Economic and Development Office.

demands. The result has been the growth of the "convenience complex": a consolidation of consumer-oriented services such as, 24 hour food stores, video stops, laundromats and other consumer demanded services.

The urban land use change from gas stations to consumer oriented complexes depicts a new trend in efficiency shopping as well as the process of land use modernization. This land use change is not just unique only to the City of Vancouver, but is common to all major cities of Canada.

It appears that this growth of convenience stores may lead to notable changes in environmental quality, traffic patterns and crime incidence within neighbourhoods. The need to validate/invalidate such perceptions prompted this study. The neighbourhood impacts -environmental and otherwise- of the store versus its user convenience was of primary concern. Other concerns included the perceived impacts on the neighbourhood of such externalities as pollution, noise, and loitering of youth.

1.1. Study Purpose

The purpose of this study was to discern the site development impacts of land use changes resulting from the conversion of gas station sites to neighbourhood convenience complexes on arterial streets. All sites selected for the study are in the City of Vancouver. These impacts were studied in terms of accessibility, environmental quality as well as the need for neighbourhood commercial activity.

2. STUDY METHODOLOGY

2.1. Site Selection

Sites were selected based on three criteria:

(1) all sites were to be located on arterial streets, but not located in heavily developed commercial strips.

(2) all sites were to be located in, or surrounded by, single-family residential districts.

(3) in addition to the grocery store, the convenience complex was to have certain other specified facilities: laundromat, video store, or restaurant.

Three convenience complexes satisfying these criteria were chosen (see Map 1).

* A Mac's Milk on Dunbar Street and West 29th Avenue
* A 7-11 on West Boulevard and West 36th Avenue
* A Mac's Milk on South West Marine Drive and Lord Street

One gas station site was selected and was used as a control site for comparison purposes (Map 1).

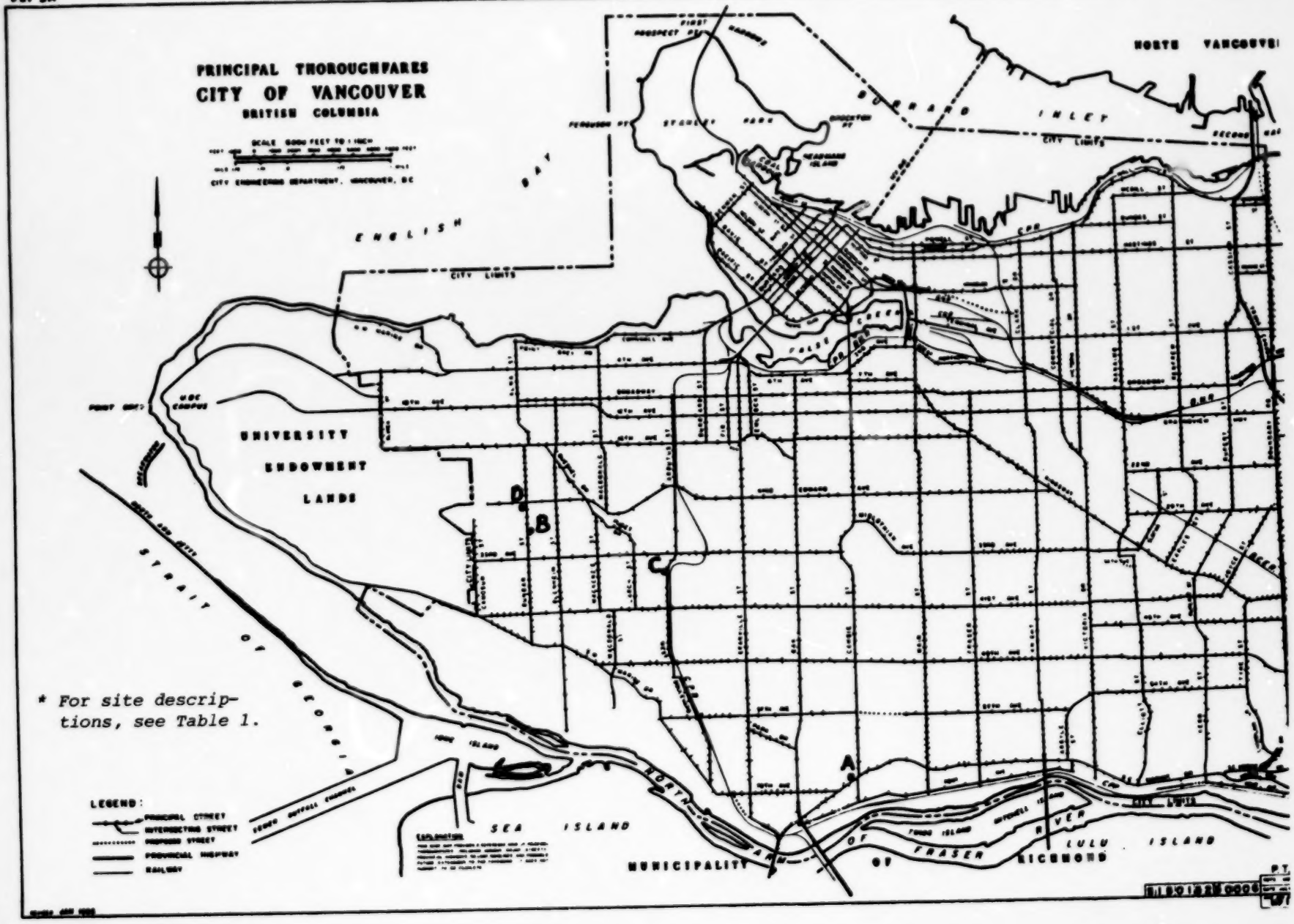
* A Shell Station on Dunbar Street and West 26th Avenue

2.2. Secondary Data

Preliminary information was collected for the following functional categories.

* Land Use and Zoning
* Transportation
* Traffic Violations
* Environmental Health and Noise Levels

Map 1: Site Locations*



* *For site descriptions, see Table 1.*

* Crime and Safety Statistics

Detailed land use and transportation analyses were carried out on each of the sites and the immediate surroundings. The intersection at each site was evaluated in terms of traffic control measures, traffic volumes, and vehicle and pedestrian safety.

2.3. Primary Data

Primary data for this study came from three subsets:

1. Neighbourhood Survey
2. Patron Survey
3. Individual Site Evaluations.

The questionnaires used for each of these surveys are included in Appendix A.

The purpose of the neighbourhood survey was to:

* Determine the residences' perceptions with respect to noise levels, littering, traffic congestion, and traffic safety problems
* Ascertain the user convenience of the complex
* Obtain a resident profile

The purpose of the patron survey was to:

* Determine a customer profile
* Assess patron perceptions in the areas of traffic safety, congestion, crime occurrence, pedestrianization, and parking supply

The purpose of the site evaluation was to evaluate the general layout and the street intersections. The evaluation was conducted using subjective scales to analyze the:

* Visual attractiveness
* Parking supply
* Vehicular and Pedestrian Safety

Personal interviews with 38 residents (not patrons at the time of interview) and 35 patrons (not necessarily immediate neighbours or residents) was undertaken for the conveniences stores; and for the gas station site, 10 residents and 20 patrons were included. Total sample number for both types of service was 48 residents and 55 patrons.

2.4. Site Characteristics

Table 1 outlines the details for the individual sites. This table includes the location of the site, land use, types of facilities, zoning, and the hours of operation for each facility (see also Map 1).

Table 1: Site Descriptions

	Site A	Site B	Site C	Site D
Location	SW Marine Drive and Lord Street	Dunbar Street and W 29th Ave	West Boulevard and 37th Ave	Dunbar Street and W 26th Ave
Use	Neighbourhood Convenience Store	Neighbourhood Convenience Store	Neighbourhood Convenience Store	Full-Service Gas Station
Facilities	Mac's Milk Stereo Shop	Mac's Milk Laundromat Bakery Photo Finishing Beauty Salon Restaurant	7-11 Store Paint Store	Shell Gas Station: 5 gas pumps 3 service bays
Zoning	C-1	C-2	RS-1	C-2
Hours of Operation	Mac's: 24 hours Stereo Shop: daytime	Mac's: 24 hours Restaurant: 5pm to 1 am Others: 9:30 am to 6 pm	7-11: 6 am to midnight Paint Store: 9:30 am to 6 pm	7 am to 11 pm
Local Area	Marpole	Dunbar-Southlands	Kerrisdale	Dunbar-Southlands

3. FINDINGS

3.1. Accessibility

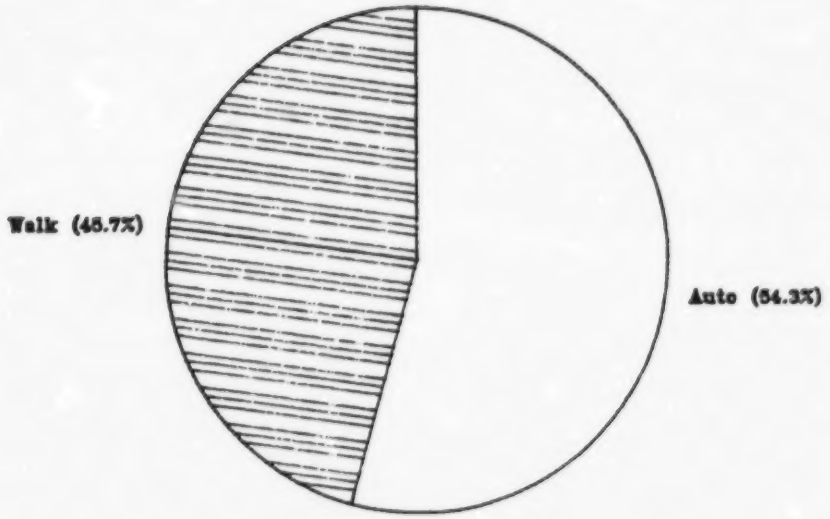
A Trip Generation Analysis was not undertaken. Under these circumstances, it was difficult to disaggregate arterial traffic and attribute a specific part to the new complexes. Although traffic safety is a concern of some residents, the majority of patrons and residents did not consider there were any serious safety or congestion problems on the adjoining streets that could be directly attributed to these complexes.

The traffic and pedestrian safety concerns were different for each site. The degree of hazard is a composite of arterial traffic volumes and pedestrian crossing volumes. The convenience stores have a significant number of foot patrons (46 percent of total, see Figure 1). On the other hand, the gas station users are primarily automobile drivers. A pedestrian has no reason the enter a gas station regularly. Thus, there is a greater likelihood of pedestrian related accidents on an adjacent arterial street with a convenience store complex. Among the sites included in this study, only Site B (Dunbar Street and West 29th Avenue) had a marked pedestrian crossing along the adjacent arterial street. Nevertheless, there is no evidence of higher pedestrian related accidents at the unmarked intersections studied.

Figure 1

TRANSPORTATION MODE DISTRIBUTION

For Users of Convenience Store

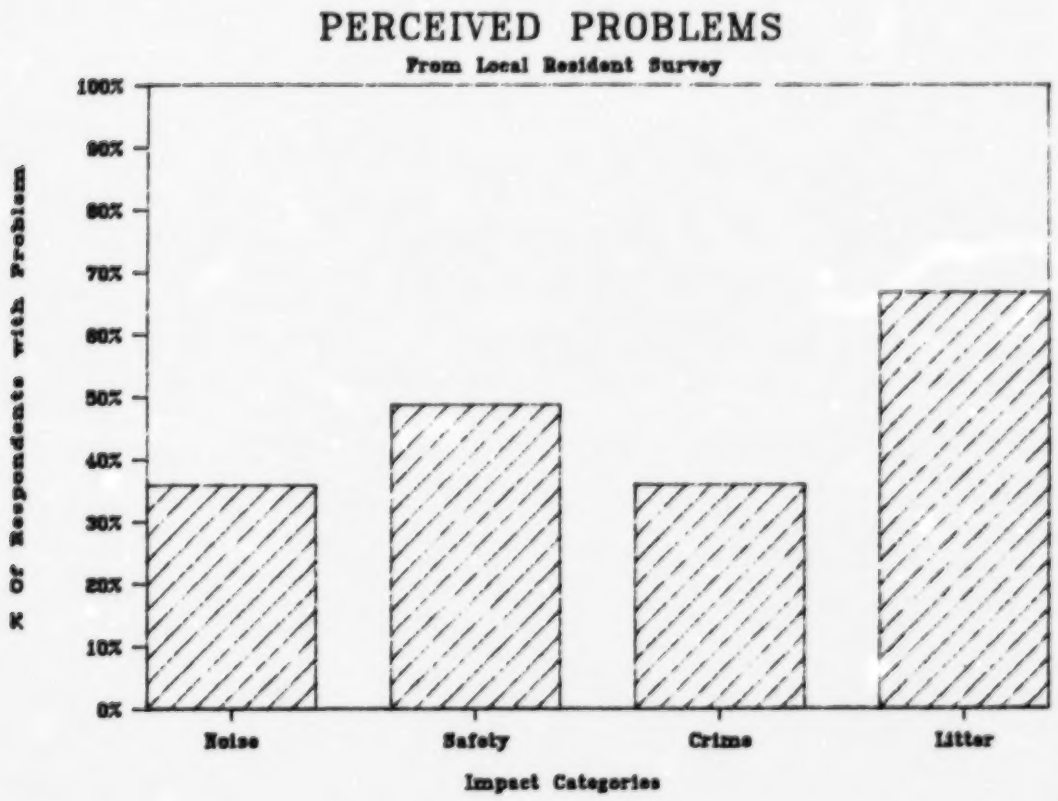


The parking supply and on-site circulation for all four sites is considered adequate according to the City of Vancouver Bylaws and Standards of Practice. Furthermore, off-site street parking is available to handle any spillover from the convenience stores. Access from the major and minor streets is sufficient. All entrances exceed 6 meters in width.

3.2. Environmental Quality

Presence of litter around and about the convenience store was identified as a major complaint from residents. In addition, complaints of traffic, noise and crime were noted.

Figure 2



Both the convenience store and gas station management require that their employees monitor the site for litter; however, it appeared that some convenience stores were less effective at cleaning up than others. Furthermore, litter problems

appeared to be more severe when the convenience store was located close to a school.

The gas station and the convenience stores also had differing impacts with respect to noise. Residents complained that convenience stores that were open for 24 hours acted as "hang outs" for youths. 24 hour facilities have caused neighbours to complain about youths drinking near the premise and causing noise on the site during 11:00 pm to 6:00 am.† Having the complex act as a youth gathering place has presented a perceived threat of safety to local residents and patrons. At one site, a few female customers mentioned that they felt intimidated by youth males that gathered around the facility at night.

3.3. Neighbourhood Commercial Amenity

The gas station and convenience stores provide a valued convenience to the neighbourhood. Public concern for the loss of local gas stations has been expressed over the last ten years, as the number of local gas stations have dropped by approximately 60 percent.‡ Previous studies have indicated that the public is concerned over the loss of local gas stations that offer vehicle servicing and full service gas bays. These local gas stations have been replaced mainly by a smaller number of self-service stations - with no service bays - in major commercial areas. The vehicle servicing component have been replaced by speciality automotive servicing businesses; however, these facilities are often in

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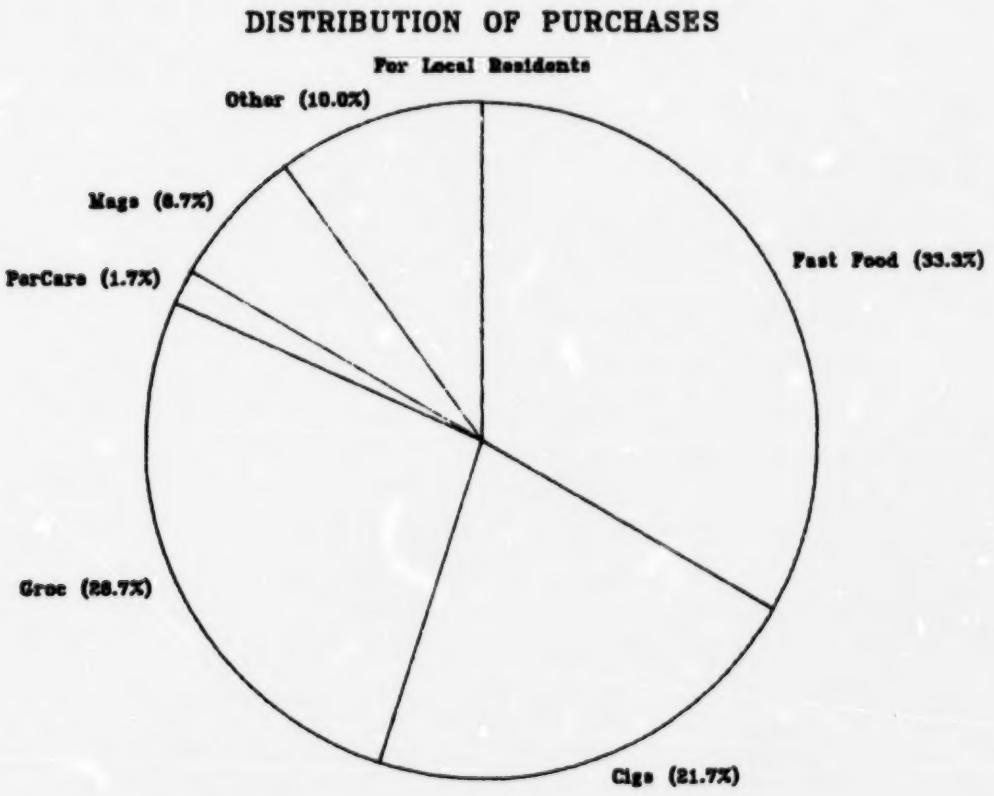
†City Managers Report to the Standing Committee Council on Community Services, June 1985.
‡ In the City of Vancouver.

inconvenient locations.

The user surveys conducted for this study indicated that a majority of residents use the convenience store an average of twice a week, primarily for fast food and groceries (Figure 3).

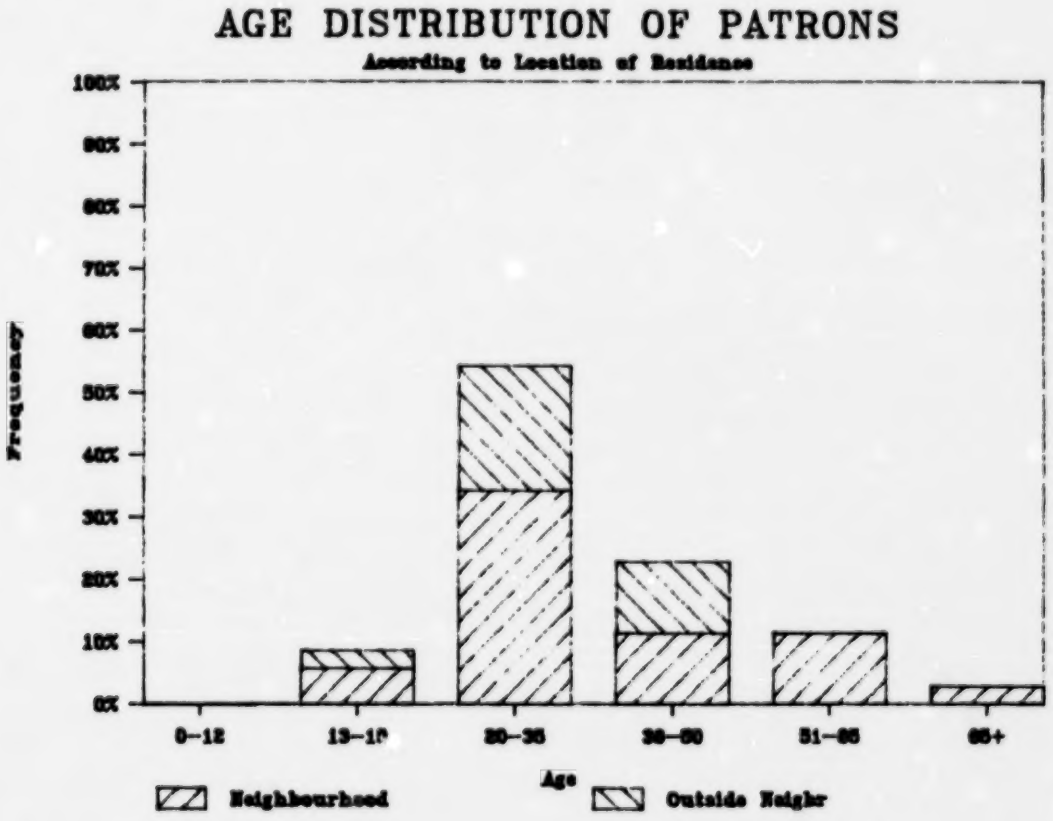
Figure 3



The residents felt that the facility offered a valuable amenity since it reduced their dependency on the supermarket. The facility worked well at late hours for "emergency" purchases, such as milk and soda pop.

The patrons interviewed were mainly in the 20-35 age category and lived in the neighbourhood (Figure 4).

Figure 4



Almost half of the patrons interviewed stated that they made a "special" trip to use the complex. This could be attributed to the role of the complex as a "convenience center".

3.4. Gas Station and the Convenience Complexes: What Differences?

A comparison between residents' perceptions of the gas station and the convenience stores reveals that residents saw the gas station as having less adverse impacts on the neighbourhood. None of the residents interviewed felt that the gas station created litter or crime problems, whereas it was noted that the convenience center had some.

When asked if local residents would prefer a convenience store in the place of a gas station, most felt that the negative impacts associated with a convenience facility mainly a gathering place (hang out) for youth, resulting in litter and having a negative influence on children outweighed its advantages. However, 82 percent of residents nearby a convenience store felt that the store was an advantage, compared to 70 percent of the gas station residents.

4. ANALYSIS AND CONCLUSIONS

Eighty-two percent of the residents surveyed felt that these complexes were a positive contribution to their neighbourhood; they were perceived as a primary convenience by residents and patrons alike.

A major concern of the convenience stores however, was the increased spread of litter. Municipal authorities can effectively monitor and regulate this activity by having store operators abide to City Health and Fire Standards, and other regulations regarding maintenance of property. Moreover, according to the neighbourhood survey, most residents felt that a reduction in store hours would be desirable. This measure could possibly negate many of the adverse impacts. such as late night noise, petty theft and vandalism, but at the same time reduce the convenience.

This study indicates that a 24-hour facility may be counter-productive in a single-family residential area. On the other hand, these 24-hour facilities work well in higher density neighbourhoods; the "faster" lifestyle -late night walkers, bar patrons - can best utilize an all-night facility. Furthermore, there is a smaller proportion of youths in a higher density neighbourhood therefore, problems associated with youths would not be as prevalent.

Professor Athert Wrisley (1986) found that in Amherst Massachusetts, chain stores offered similar items in all locations regardless of the socio-economic makeup and individual preferences of an area. This point can also be applied to hours of operation: not all locations benefit from a 24 hour facility because of

their different neighbourhood compositions and tolerance levels.

None of the complexes evaluated seemed to create any significant traffic or safety problems. The minimum standards currently established for access and egress to the facilities are considered suitable and should continue to be enforced as they exist. Similarly, parking standards are appropriate.

On-site congestion did not appear to be a factor, as many patrons walked to the facility. Patrons that drove to the store only used the parking spaces for a few minutes, thus ample parking was usually available. The most important consideration was that traffic regulations be controlled by the authorities in order to ensure continuing safety. The physical layout of the convenience sites was acceptable; however, as many of the users were on their way to some other destination, their haste may result in unsafe behaviour.

Lastly, one final observation is that the Mac's and 7-11 complex is definitely a new trend in consumer convenience. the regular corner store carrying the basic amenities is no longer the norm; rather, what has emerged to take its place is a convenience complex equipped with groceries, fast food, and video items in a site with other consumer-oriented services. This type of facility is part of the modernization -efficiency in shopping - trend. Although this study was not designed as an marketing indicator, a couple of general points can be made: consumers prefer this type of service over the traditional corner store, and convenience stores have the propensity to attract business at the expense of other comparable local businesses.

5. PLANNING IMPLICATIONS

The purpose of this study was to discern any neighbourhood impacts resulting from an urban land use change: gas stations to convenience store complexes. It was stated that there is a new shopping trend emerging: a consolidation of locally-based residential commercial activity. However, this scale of commercial concentration is not without its impacts at the neighbourhood level.

To minimize the negative impacts on surrounding neighbourhoods and adjacent arterials, proper monitoring of these facilities is necessary. Primarily, further traffic engineering and safety studies should be conducted so that a more objective measure can be used to assess pedestrian and traffic safety. This would ensure proper traffic system management of the convenience sites. Moreover, proper site inspection is necessary for public health and safety. In extreme situations, excessive amounts of litter can be considered as a fire hazard. By enforcing Fire and Street Bylaws, the proprietor will become more aware of his responsibilities to effectively monitor the site. Enforcing Fire and Street Bylaws will have the advantage of checking the complex without having to create new maintenance bylaws for the stores.

To adequately assess the implications of these facilities, an economic base analysis should be undertaken examining: the marketability and viability of these services, and the critical distances needed to maintain commercial viability and a critical mass of service that will not jeopardize other businesses. Realizing that these convenience complexes attract the majority of local businesses, in the future, planners should consider a critical distance and critical mass when issuing

development permits. Planners should provide a delicate balance between free enterprise and restricting growth. These 7-11/Mac's complexes do provide a valuable amenity, however, an economic base study would help discern between the viability and proper distribution of these services, and may provide some insight into their effects on other local businesses.

This study has shown that in the past, city planners have not been concerned with the regulation of these types of facilities to ensure an acceptable standard of environmental quality. However, it is our recommendation that the regulation and monitoring of these facilities must be a concern for planners: if they do not begin to mitigate the impacts cited, city council will be faced with representation from affected residents.

Another area for further analysis is not in the type of operation, but rather in the hours of operation. Residents felt that 24 hour facilities have negative impacts attributed to them: the perception that people are always wondering and loitering about the premise. This point was also verified by the City Managers Report on Gas Stations. It noted that although the enterprise did not cause adverse problems to the community, residents perceived it as disruptive between 11:00 pm and 6:00 am. Planners should try to minimize this affect by allowing complexes that have mutually supportive hours of operation; rather than having all of the facilities in a complex operating 24 hours a day, the complex should have businesses with different hours of operation. Although this study did not examine what would be a properly supportive mix, we do know that longer hours of operation have contributed to youth related problems.

The final point deals with the zoning layout of commercial activities.

Traditionally, commercial activities were designated on the four corners of an intersection. No longer are these enterprises the traditional 400 square foot "Ma and Pa" corner store, now they are 2000-5000 square foot Mini-Markets. Economically, these facilities may be commercially viable, however, realistically and perceptually the public feels them to have adverse impacts. Given that environmental precautions are taken into consideration litter control, fire safety, police surveillance, and noise barriers - it is the responsibility of the planner to ensure that these facilities are creating a semblance of quiet and order in the community.

6. ACKNOWLEDGEMENTS

This paper is based on a project conceived by Professor V. Setty Pendakur as part of the instructional process in Urban Transportation Planning, and undertaken by the graduate students in the School of Community and Regional Planning at the University of British Columbia. In addition to the authors, Dave Button, Dan Harrington, Rob Innis, Bill Moore, Bill Rorabeck, Alfred Seemin, Alena Straka, and Dave Turner participated in all but the final product of the project. The participants collected, selected, tabulated and interpreted the data on various sets of sites. Without their participation, this paper would not have been launched, or if undertaken, would have been incomplete. Thus, their contribution is gratefully acknowledged.

Thanks are due to L.E. Contrell and T. Hutton of the City of Vancouver Economic Development Commissions for their assistance and valuable comments.

The analysis, the interpretations and the findings of this paper are solely those of the authors, and do not necessarily reflect the views of the University of British Columbia nor the other participants in this study.

location_____
group # _____

NEIGHBOURHOOD RESIDENT'S QUESTIONAIRE

OBSERVED DATA

Distance of residence from complex _____ meters.

Interviewees sex: M or F and age 0-12_____ 13-19_____ 20-35_____ 36-50_____ 51-65_____ 65+_____.

CONVENIENCE OF RETAIL COMPLEX

1. Do you use the complex? Y N
   a. How many times per week? _____
   b. Frequency between 7:00 am and 11:00 pm? _____
   c. Frequency between 11:00 pm and 7:00 am? _____

2. What types of goods or services do you normally purchase from the complex?
   fast food_____ groceries_____
   cigarettes_____ personal care_____
   magazines_____ other_____

3. Would you prefer if it was only open between 7:00 am and 11:00 pm? Y N

PERCEPTION OF IMPACTS

4. Do you feel that it creates a noise problem? Y N
   a. What is the cause of the noise? vehicles_____
      people_____
      other_____
   b. When is noise a problem? (24 hour clock) _____

5. Do you feel it creates any traffic safety problems? Y N
   a. What causes the traffic problem?
      speeding_____ congestion_____
      parking_____ other_____

6. Has there been an increase in crime, such as vandalism or theft? Y N
   a. What type? vandalism _____
      property theft _____
      personal injury _____

7. Has there been an increase in litter around your property? Y N

8. Overall, do you feel the advantages of the complex outweigh the disadvantages? Y N

PERSONAL INFORMATION

8. How many people live here (house hold size)? _____

9. How long have you lived here? _____

10. Are you currently employed? Y N

11. Household income?
    less than $25,000_____
    $25,000 - $40,000_____
    more than $40,000_____

12. What is your occupation? bluecollar_____
    whitecollar_____
    student_____
    clerical_____

PATRON SURVEY

Sampling should be as random as possible: select for example, every 10th customer. Randomness will ensure a representative sample.

Interviewee information:

sex M or F

age 0-12 _____ 13-19 _____ 20-35 _____
36-50 _____ 51-65 _____ 65+ _____

Standard Introduction:

Good afternoon Sir (or Ma'am), I am a U.B.C. Planning Student doing a study on the impacts of this 7-Eleven store on the surrounding neighbourhood. If it isn't too much of an inconvenience, would you mind answering a couple of questions? This survey will be very brief and should only take a couple of minutes.

Questions followed by lists will be categorized under the appropriate heading by the surveyor.

General Questions:

1) Where approximately do you live?

i) inside neighbourhood region _____
ii) outside (if outside ask question 1a) _____

1a) Did you make a special trip to this store or is it on your way home/to work/to destination?

i) special trip _____
ii) on the way _____

2) How did you get to this store?

i) auto(taxi) _____
ii) bus _____
iii) bike _____
iv) walk _____
v) motorcycle _____

3) How often do you use this facility?

_____ per week _____ per month

4) What types of purchases are you making?

i) fast food _____
(pop, coffee, chips, sandwiches, ice cream)

ii) groceries _____
(milk, bread, eggs, vegetables, household products)

iii) cigarettes _____

iv) personal care _____
(toothpaste, soap etc.)

v) magazine & papers _____

vi) other _____
(video games, video rental, banking etc.)

5) Do you use any of the other stores in this complex? Y N

Perceptions:

1) If you feel there is a safety problem around the facility what would it be? (ie. traffic, pedestrian, crime)
_____

2) On a scale from 1-5 (1=major problem 5=no problem) how would rate the following:

i) parking supply within the complex _____
ii) traffic congestion within a two block radius _____

Socio-Economic Makeup:

1) Are you presently employed? Y N

1a) What is your occupation?

i) blue collar _____
ii) white collar _____
iii) student _____
iv) clerical _____
v) unemployed _____

Appendix B: Survey Results

PATRON SURVEY RESULTS

TABLE B1: PATRON PROFILE

Age	Num	Distr	Residence Neighb	Distr	Outside	Distr
0-12		0%		0%		0%
13-19	3	9%	2	6%	1	3%
20-35	19	54%	12	34%	7	20%
36-50	8	23%	4	11%	4	11%
51-65	4	11%	4	11%		0%
65+	1	3%	1	3%		0%
Total	35		23		12	

TABLE B2: MODE DISTRIBUTION

Mode	Distribution	Trip Special	On the Way
Auto	19	3	16
Bus			
Bike			
Walk	16	6	10
Mtrcycl			
Total	35	9	26

TABLE B3: FREQUENCY OF USE

per week	Num	Distr	Type of Purchase Past Food	Cigs	Groc	PerCare	Mags	Other
0.0		0%						
.25	8	23%	5	3	3			
.50	3	9%	1	1	1			
.75		0%						
1.0	6	17%	2		3			2
1.5		0%						
2.0	6	17%	3		1			1
2.5		0%						
3.0	5	14%	1		4			1
4.0	5	14%	4	1	3			1
5.0		0%						
6.0	1	3%	1		11			
7.0		0%						
8.0		0%						
9.0		0%						
10+	1	3%	1	1	1			
Total	35		18	6	27	0	0	5

TABLE B4: USE OF OTHER FACILITIES IN COMPLEX

Store	Num	Distr
7-11/Mac'	17	77%
+Others	5	23%
Total	22	

TABLE B5: SOCIO-ECON MAKEUP OF PATRONS

Occupatio	Num	Distr
blue col	5	17%
white col	13	43%
student	5	17%
clerical	6	20%
unempl	1	3%
Total	30	

TABLE B6: TRAFFIC PERCEPTIONS

Scale	Parking		Traffic Cong	
	Num	Distr	Num	Distr
1	1	3%	3	10%
2	3	10%	12	39%
3	4	13%	5	16%
4	6	19%	2	6%
5	17	55%	9	29%
Total	31		31	

(1=major problem 5=no problem)

RESIDENT SURVEY RESULTS

TABLE B7: PURCHASE PROFILE

Age	TYPE OF PURCHASE Past Food	Cigs	Groc	PerCare	Mags	Other
0-12	1					
13-19	5	1	2			
20-35	5	3	4	1	3	1
36-50	5	5	8			2
51-65	3	3	3			2
65+	1	1	3		1	1
Total	20	13	18	1	4	6

TABLE B8: USE OF FACILITY

Dis (m)	Use Facility	Avg times per week
< 50	17	3.0
51-100	12	3.0
101-150	5	2.0
151-200	1	1.0
201-250		0.0
251-300	3	0.5
Total	38	1.6

TABLE B9: PERCEIVED PROBLEMS VS DISTANCE

Dis (m)	# of Responses	Noise	Traffic Safety	Crime	Litter	Is Store Advantage (% yes)	Day Hrs Only (% yes)
< 50	14	11	10	8	12	75%	75%
51-100	12	2	6	4	8	80%	30%
101-150	6	1	1	1	5	50%	50%
151-200	2		1			100%	100%
201-250	1		1	1	1	0%	100%
251-300	4					100%	25%
Total	39	14	19	14	26		
% Total	100%	36%	49%	36%	67%		

TABLE B10: PERCEIVED PROBLEM VS AGE

Age	# of Responses	Noise	Traffic Safety	Crime	Litter	Is Store Advantage (% yes)	Day Hrs Only (% yes)
0-12	1	1	1	1	1	0%	0%
13-19	5	1	2	2	4	50%	25%
20-35	11	4	4	5	6	100%	17%
36-50	12	5	3	6	7	67%	83%
51-65	9	2	3	3	5	100%	50%
65+	6	1	2	1	3	100%	60%
Total	44	14	15	18	26		

TABLE B11: PERCEIVED PROBLEMS VS OCCUPATION

Occ	# of Responses	Noise	Traffic Safety	Crime	Litter	Is Store Advantage (% yes)	Day Hrs Only (% yes)
blue col							
white col	8	1	1	1	3	75%	75%
student	5	1	2	2	2	80%	20%
clerical							
unempl	2		2		1	100%	50%
Total	15	2	5	3	6		

TABLE B12: RESIDENTS NOISE PERCEPTIONS

NOISE PROBLEMS Total:5	Number w Problem	Distr
Vehs	3	60%
People	2	40%
Other		0%
Total	5	

TABLE B13: RESIDENTS CRIME PERCEPTIONS

CRIME PROBLEMS Total:7	Number w Problem	Distr
Vandalism	4	50%
Theft	4	50%
Personal Inj		0%
Total	8	

TABLE B14: RESIDENTS TRAFFIC PERCEPTIONS

TRAFFIC PROBLEM Total:5	Number w Problem	Distr
Speeding	2	29%
Parking	2	29%
Congestion	3	43%
Other		0%
Total	7	

TABLE B15: HOUSEHOLD SIZE DISTRIBUTION

HOUSEHOLD SIZE	Num	Distr
1	1	4%
2	6	21%
3	3	11%
4	11	39%
>5	7	25%
Total	28	